

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

ATTY. DOCKET NO.
SYMYX/008 DIV. CON

APPLN. NO.
10/719,441

APPLICANT
Yumin Liu

CONFIRMATION NO. :

FILING DATE
November 20, 2003

GROUP

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
TN	3,502,737 ✓	03/24/70	Ghublikian	260	669	
	3,670,044 ✓	06/13/72	Drehman et al.	260	683.3	
	3,678,124 ✓	07/18/72	Stepanov et al.	260	680	
	3,832,205 ✓	08/27/74	Lowery	106	288	
	3,862,256 ✓	01/21/75	Isailingold et al.	260	654	
	3,901,828	08/26/75	Mai et al.	252	462	
	3,907,834	09/23/75	Milberger et al.	260	346	
	3,929,670	12/30/75	Kudo et al.	252	455	
	4,003,978	01/18/77	Shiraishi et al.	423	237	
	4,059,664	11/22/77	Nicolas et al.	264	66	
	4,070,413 ✓	01/24/78	Imai	260	683.3	
	4,115,441 ✓	09/19/78	Shaw et al.	562	534	
	4,176,140 ✓	11/27/79	Bertus et al.	585	629	
	4,180,690 ✓	12/25/79	Imai	585	443	
	4,250,346 ✓	02/10/81	Young et al.	585	658	
	4,251,394	02/17/81	Carter et al.	252	452	
	4,283,307 ✓	08/11/81	Barone et al.	252	432	
	4,296,607 ✓	10/27/81	Lawless	62	6	
	4,374,758	02/22/83	Sasaki et al.	252	439	
	4,408,067	10/04/83	Nakamura et al.	560	215	
	4,418,007	11/29/83	Derrien	502	312	
	4,435,607 ✓	03/06/84	Imai	585	443	
	4,565,898 ✓	01/21/86	O'Hara et al.	585	441	
	4,568,790 ✓	02/04/86	McCain	585	658	
	4,613,715 ✓	09/23/86	Haskell	585	412	
↓	4,657,653	04/14/87	Bouet	204	290	

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TN	4,672,146 ✓	06/09/87	Abrevaya et al.	585	660	
	4,709,071 ✓	11/24/87	Sasaki et al.	558	322	
	4,717,694	01/05/88	Tamura et al.	501	135	
	4,769,357	09/06/88	Sarumar et al.	502	245	
	4,788,371 ✓	11/29/88	Imai et al.	585	443	
	4,940,826 ✓	07/10/90	Font Freide et al.	585	600	
	4,996,387 ✓	02/26/91	Gerhold et al.	585	654	
	5,053,084	10/01/91	Masumoto et al	148	11.5	
	5,053,577 ✓	10/01/91	Teller et al.	585	500	
	5,086,032	02/04/92	Mazzocchia et al.	502	315	
	5,094,990 ✓	03/10/92	Sasaki et al	502	214	
	5,136,104	08/04/92	Saito et al.	568	431	
	5,162,578 ✓	11/10/92	McCain, Jr., et al.	562	512.2	
	5,210,293 ✓	05/05/93	Kitson	562	512.2	
	5,219,816 ✓	06/15/93	Zhou et al.	502	223	
	5,376,613 ✓	12/27/94	Dellinger et al.	502	304	
	5,380,692	01/10/95	Nakatsuji et al.	502	303	
	5,393,622	02/28/95	Nitta et al.	429	223	
	5,430,209 ✓	07/04/95	Agaskar et al.			
	5,439,859 ✓	08/08/95	Durante et al.	502	66	
	5,447,705	09/05/95	Petit et al.	423	418.2	
	5,593,935 ✓	01/14/97	Golunski et al.	502	339	
	5,723,707 ✓	03/03/98	Heyse et al.	585	444	
	5,733,518 ✓	03/31/98	Durante et al.	423	248	
	5,759,946 ✓	06/02/98	Hoang et al.	502	303	
	5,780,700 ✓	07/14/98	Hagenmeyer et al.	585	617	

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U.S. PATENT DOCUMENTS

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
TN	EP 544 372 A1 ✓	06/02/93	EPO	B01J	27/19		
	EP 573 713 A1 ✓	12/15/93	EPO	C07C	253/26		
	EP 661 254 A2 ✓	07/05/95	EPO	C07C	5/48		
	WO 96/33149 ✓	10/24/96	PCT	C07C	5/327		
	WO 99/42404 ✓	08/26/99	PCT	C01G	51/00		
↓	WO 99/64160 ✓	12/16/99	PCT	B01L	3/02		

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER INITIALS

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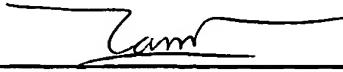
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TN	Baiker, Alfons, "Recent Developments in Heterogeneous Catalytic Oxidation for Fine Chemicals Synthesis," 5th International Symposium on Heterogeneous Catalysis and Fine Chemicals, Lyon, France, Aug. 30 – Sept. 3, 1999, PLI1	✓
	Barrault, J., et al., "Selective Oxidation of Propane into Oxygenated Compounds over Promoted Nickel-molybdenum Catalysts," 3rd World Congress on Oxidation Catalysis, pp. 375-382	✓
	Dalmon, et al., "Hydrogenolysis of C ₂ H ₆ , C ₃ H ₈ , and n-C ₄ H ₁₀ over Silica-Supported Nickel-Copper Catalysts," Journal of Catalysis, 66, 214-221, (1980)	✓
	Ducarme, et al., "Low Temperature Oxidative Dehydrogenation of Ethane over Ni-based Catalysts", 23 Catalysis Letters 97-101 (1994)	✓
	Ducarme, V., et al., "Low Temperature Oxidative Dehydrogenation of Ethane Over New Catalysts Based on Group VIII Metals," Symposium on Heterogeneous Hydrocarbon Oxidation Presented before the Division of Petroleum Chemistry, Inc., 211 th National Meeting, American Chemical Society, New Orleans, LA, March 24-29, 1996, pp. 153-156	✓
	Ducarme, V., et al., "Oxidative Dehydrogenation of Ethane at Low Temperature Over Nickel Catalysts: Influence of Morphology and Chemical State of the Solid During Reaction," Studies in Surface Science and Catalysis, Vol. 107, 361-366	✓
	Jalowiecki-Duhamel, L., et al., "Oxidative Dehydrogenation of Propane on CeNi _x O _y (0<x<1) Mixed Oxides Hydrogen Acceptors," 3rd World Congress on Oxidation Catalysis, pp. 383-392	✓
	Ji, Lang., et al., "Effect of Group VIII Elements on the Behavior of Li/CaO Catalyst in the Oxidative Dehydrogenation of Ethane," React. Kinet. Catal. Lett., Vol. 62, No.1, 121-128 (1997)	✓
	Juarez, Lopez R. et al., "Oxidative Dehydrogenation of Ethane on Supported Vanadium-Containing Oxides," 124 Applied Catalysis A: General 281-96 (1995)	✓
	Lin, Manhua, et al., "Reaction Intermediates in the Selective Oxidation of Propane Over a Mixed Metal Oxide Catalyst," Proceedings ISO'99, Rimini (Italy), Sept. 10-11, 1999, G. Centi and S. Perahoner Ed., SCI Pub. 1999, pp. 143-144	✓
	Liu, Yumin, et al., "High-Throughput Synthesis and Screening of Mixed Metal Oxides for Ethane Oxidative Dehydrogenation to Ethylene," 4th European Congress on Catalysis, Rimini, Italy, September 5-10, 1999, Book of Abstracts, p. 41	✓
	Liu, Yumin, et al., "High-Throughput Synthesis and Screening of V-Al-Nb and Cr-Al-Nb Oxide Libraries for Ethane Oxidative Dehydrogenation to Ethylene," Proceedings ISO'99, Rimini (Italy), Sept. 10-11, 1999, G. Centi and S. Perahoner. Ed., SCI Pub. 1999, pp. 117-118	✓
↓	Nazimek, D., "Influence of Added Copper on the Activity of Ni/Al ₂ O ₃ Catalysts in the Hydrogenolysis of n-Butane," React. Kinet. Catal. Lett., Vol. 13, No. 4, 331-337 (1980)	✓

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TN	Popova, et al., "Characterization of Nickel Loaded Mordenite Catalysts by Temperature Programmed Reduction," React. Kinet. Catal. Lett., Vol. 39, No. 1,27-32 (1989)
	Richardson, J.T., et al., "Characterization and Deactivation of NiO-ThO ₂ Catalysts," Applied Catalysis, 48, (1989) 159-176
	Schuurman, Y. et al., "Low Temperature Oxidative Dehydrogenation of Ethane over Catalyst Based on Group VIII Metals," 163 Applied Catalysis A: General 227-35 (1997)
	Sinfelt, et al., "Catalytic Hydrogenolysis and Dehydration Over Copper-Nickel Alloys," Journal of Catalysis, 24, 283-296 (1972)
	Thorsteinson, E. M. et al., The Oxidative Dehydrogenation of Ethane over Catalyst Containing Mixed Oxide of Molybdenum and Vanadium," 52 J. Catalysis 116-32 (1978)
	Zhang, Mingqian, et al., "Calcium-Nickel-Lithium Oxide: a High Selectivity Catalyst for the Oxidative Dehydrogenation of Ethane to Ethylene," J. Chem. Soc., Chem. Commun., 1993, pp. 1480-1481

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